

Little Ringed Plover 2007

Title

Breeding Plover Survey 2007 (Little Ringed Plover)

(Note: In the breeding season of 2007, the BTO ran a UK-wide survey covering both Little Ringed *Charadrius dubius* and Ringed Plovers *C. hiaticula*. The surveys were run together and both species were looked for in each site, but the sites selected for each species were independent. They are therefore considered as separate surveys as were previous "joint" surveys of the two species.)

Description and Summary of Results

Little Ringed Plovers first nested in the UK at Tring Reservoirs in 1938 and breeding numbers have increased steadily since, accompanied by a westward and northward range expansion. By 1950 there were about 30 pairs, in 1959 98, and by 1967 223 pairs at 154 sites in 26 counties. In 1973, a survey of the species summering in Britain revealed at least 467 pairs at 261 localities. The last national survey, in 1984, showed that the population had further increased to 608-631 pairs at 370 sites and they were recorded in most counties in England and Wales. There were no breeding records from Scotland or Northern Ireland. The most recent population estimate before the 2007 survey was of 825-1070 summering pairs, estimated for the period of the 1988-1991 Breeding Atlas.

The 2007 survey of Little Ringed Plover aimed to update the population estimate for the UK and its constituent countries; and to investigate the current distribution and habitat associations – the species has extended its range since first colonising, and in particular taking advantage of man-made habitats such as gravel pits.

The overall "Breeding Plover Survey" also aimed to census all Sites of Special Scientific Interest (SSSIs) and Special Protection Areas (SPAs) designated for their importance for breeding "ringed" plovers, although only one site is designated specifically for Little Ringed Plovers.

In total, 70% of the 1136 Key Sites and 66% of the 1355 Sample Tetrads were covered for Little Ringed Plover. (These totals exclude counts received as supplementary records.)

In total, 901 pairs of Little Ringed Plovers were recorded during the survey. The majority (82%) were recorded in England, with 144 (16%) in Wales and 22 (2%) pairs in Scotland.

None were recorded in Northern Ireland, the Isle of Man or Channel Islands. It was estimated that there were 1,239 (95% confidence limits 1,175-1,311) pairs breeding in Great Britain in 2007 but it was not possible to produce separate estimates for each constituent country. The one SSSI currently designated for Little Ringed Plover -- Afon Tywi in Dyfed -- held 59 pairs (5.3% of the national estimate).

The estimate of 1,239 pairs represents an increase on the 1984 figure and that from the 1988-1991 Breeding Atlas. This is partly a simple population increase and range expansion, but is also partly due to more comprehensive sampling of areas away from known sites.

Little Ringed Plovers typically breed on recently disturbed ground and take advantage of temporary habitats. Consequently, at a local scale, several new breeding localities were reported. However, the species' overall breeding range showed only a slight expansion. The core range in Great Britain remains southeast England, through the Midlands to the northwest, though it has spread further into Wales, northern England and south and east Scotland since 1984.

Most pairs were recorded on either gravel or sand pits (26% of pairs) or river shingle (18%). Reservoirslake shores and pools (18%), and various industrial and urban habitats (16%) were also important.

Methods of Data Capture

The unit of survey was the tetrad (2-km square) and there were two kinds sampled:

- a) 'Key Site Tetrads' -- defined as the tetrads encompassing sites that were known, either from recent bird reports or the 1984 surveys, to have been previously occupied by the species;
- b) 'Sample Tetrads' -- a stratified selection to provide estimates of the number away from the Key Sites.

Three visits were requested to each tetrad: 15 April to 14 May, 15 May to 14 June and 15 June to 15 July in the spring and summer of 2007.

An individual form was produced for each survey site with a map of the survey tetrad to be covered. Observers were asked to record the numbers of adults and breeding pairs present on each visit (and plot registrations onto a map) and to estimate the total number of breeding pairs over the course of the visits and assign these to habitat classes. If not all the area was surveyed, observers were asked to map or estimate the percentage of the area which was covered.

Purpose of Data Capture

The stated aims of the 2007 survey were: 1) to obtain an updated population estimate for the species in the UK and its constituent countries; and 2) to investigate the species' current distribution and habitat associations.

Geographic Coverage

The surveys covered tetrads in all constituent countries of the United Kingdom (England, Northern Ireland, Scotland, Wales), plus the Crown Dependencies of the Channel Islands and Isle of Man.

Temporal Coverage

Three visits were requested to specified sites (tetrads) in the breeding season of 2007. Visits were requested to be from 15 April to 14 May, 15 May to 14 June and 15 June to 15 July.

Other Interested parties

The Breeding Plover Survey was funded by Natural England, Scottish Natural Heritage, the Countryside Council for Wales, the Environment & Heritage Service (Northern Ireland), Anglian Water and the D'Oyly Carte Charitable Trust. BTO funding came from the legacy-based fund Birds in Trust, and the Christmas and New Year Bird Count.

Organiser(s)

Greg Conway as a BTO staff member

Current Staff Contact

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Publications

The main report of the survey is not yet published although the basis of what will become this is in a BTO Research Report:

Conway, G.J., Burton, N.H.K., Handschuh, M. & Austin, G.E. 2008. UK population estimates from the 2007 Breeding Little Ringed Plover and Ringed Plover surveys. *BTO Research Report* no.510.

The survey was noticed in *BTO News* numbers 259, 261, 267, 269, 275 and 280.

(Note that additional data were received after 2008 and the population estimate was revised from that noted in the report.)

Available from NBN?

No.

Computer data -- location

BTO Archives area of the Windows network.

Computer data -- outline contents

An Excel spreadsheet containing the details of the numbers of birds on each site (tetrad) surveyed.

Computer data -- description of contents

The columns in the spreadsheet are:

Tetrad - standard coding; Source - Core tetrad, Sample tetrad, part of Ringed Plover Survey; Amended_sep08 - occasional note; Amended_date - occasional note; Visits - 0, 1 or 2; LPpairs - no. of pairs found; LPother - no. of other birds found; AssumedCoverage - % of tetrad; CoveredYNA - Y(es), N(o), A(ssumed) - last usually as observer knew there was no suitable habitat; RPPairs - no. of pairs of Ringed Plover found; Problem - ?? (almost all are 0); pc_Tetrad_Surveyed - % of tetrad actually surveyed; Site_name; Central_GR; Region - 4-letter BTO region; County; CountryName; TenKM; Region_for_allocation - 4-letter BTO region; Transfer - occasional YES meaning moved to another region; RegStatus - Noted as Vacant if no RR; Surveyor - Name; Out - ??; Returned - date of return of data to BTO;

Then a series of columns with the number of pairs in each of the main habitat types:

Gravel_Pit; Sand_Pit; Chalk_Pit; Quarry_other; Colliery; Oth_Ind(ustrial); R_shingle; Reservoir; Lake;

Pool_Scape; Farmland; Waste_Dump; Saltmarsh; Waste_lagoon; Heathland; Sewage_Works;

Building_Dev_Site; Airfield; Carpark; HabUnknown;

Notes; RPCount; ExtraNotes

Information held in BTO Archives

BTO Archives: 1 Archive Box of data etc.

Notes on Access and Use

Other information needed

Notes on Survey Design

A total of 1136 Key Sites tetrads were identified for Little Ringed Plover. Supplementary counts were also received, some from surveys of tetrads covered for Ringed Plover. These latter counts were treated as Key Sites in subsequent analyses. Data from a survey of Little Ringed Plovers in Grampian in 2005 were also used as supplementary records, as this area was not covered for the species in 2007.

The 1984 Little Ringed Plover survey only provided a minimum estimate of the overall population of the species in the country as there were no attempts to estimate the numbers of pairs away from the sites surveyed. In order to obtain more complete estimates (with confidence limits) of the total numbers of pairs across the UK, the 2007 survey also included data from Sample Tetrads in areas away from the Key Sites. Samples of tetrads were selected randomly from species-specific stratifications. Use of these stratifications aimed to minimise the magnitude of the confidence limits attached to the resulting population estimates while ensuring that a wide spectrum of habitats in the country was surveyed. The initial stratification was based on freshwater cover data derived from the Centre for Ecology and Hydrology (CEH) Land-class 2000 database, an upland/lowland classification and the species' distribution data derived from the 1984 survey. Areas were further split regionally into a 'core area' encompassed by a 30km buffer around the breeding records from the 1984 survey and the area beyond this but within 200km of the 1984 breeding distribution. This second 'outer area' represented a region, including lowland parts of Wales and Scotland, where the species had not been recorded in 1984, but where it was

known to have been recorded subsequently, and where densities would have been lower than in the core area.

Specific Issues for Analysis

Prior to estimation of population sizes, allowance first needed to be made for the number of visits made to each site. The mean number of pairs estimated to occur on a site was less for those only visited once than for those visited more often. This may have been because of the number of visits made or, alternatively, because observers felt the habitat was unsuitable and so didn't make a second visit. There were no differences between the numbers estimated to occur on sites visited twice and those visited three times or more. To allow for possible under-recording on sites only visited once, a correction factor was calculated by comparing, for those Key Sites or Sample Tetrads visited twice, the numbers recorded on the first visit to the overall number of pairs estimated to occur. The correction factor thus calculated was 1.21.

The population size was estimated using bootstrap techniques similar to those that have proven successful for estimating national and regional populations of waterbird species. With 999 repetitions, separate estimates were made of the total population size across Great Britain. Each of these overall estimates was obtained by summing the total number of individuals recorded across all Key Sites and estimates for each stratum contributing to the country or dependency in question. The latter were derived for each stratum by taking a random sample with replacement from the survey data for the given stratum until the cumulative land area equated to the total for the entire country or dependency assigned to that stratum outside of the surveyed Key Sites. (Assessment of the area covered by Sample Tetrads and Key Sites, and thus the cumulative land area outwith Key Sites for which estimates were required, took into account observers' estimates of the percentage area covered within each tetrad.) The estimates were used to calculate respectively the median, and lower and upper 95% confidence limits for the population in each case.

In total, 1355 Sample Tetrads were selected from the stratification. During subsequent analyses, strata were simplified. There were only two Little Ringed Plover records from tetrads classified as 'upland' despite extensive sampling. These were subsequently treated as supplementary, and extrapolation of data from Sample Tetrads was restricted to lowland habitat.